



# **Symposium on Mileage-Based User Fees and Transportation Finance Summit**

## **Thematic Report**

**Jersey City, New Jersey  
April 29-May 1, 2012**

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## Executive Summary

The *Symposium on Mileage-Based User Fees (MBUF) and Transportation Finance Summit* addressed two key issues facing the U.S. tolling industry: the immediate need to maintain and rebuild an aging Interstate highway infrastructure, and the opportunity to introduce new financing mechanisms that will be more sustainable than the federal excise tax on gasoline.

When participants convened in Jersey City April 29-May 1, Jordi Graells, President of the International Bridge, Tunnel, and Turnpike Association (IBTTA), stressed that this is the industry's moment "to go straight to the point and deliver real solutions." IBTTA Executive Director and CEO Patrick Jones noted that customers pay hundreds or thousands of dollars per year for water, electricity, communications, and fuel, "yet not many people recognize that we spend only \$275 a year in [per capita] gas taxes to support a tremendous road infrastructure."

Through panel presentations and intensive audience discussion, the Symposium generated several key conclusions and takeaways:

- Gasoline tax revenues have been eroded by improved vehicle efficiency, new fuel sources, and changing patterns of vehicle use, at a time when much of the Interstate highway system is due for replacement or major upgrade. This combination of rising demand and declining resources represents an unparalleled financial crisis, so the fundamental goal of tolling and MBUF must be to build a more solid foundation for transportation finance.
- Although the U.S. federal government covered 90% of the cost of building the Interstate network, states now pay more every five years for maintenance, construction, and expansion than the system originally cost to build. Federal funds cover 40% of annual system costs, and that proportion is widely expected to decline.
- Allowing for 2.5% annual inflation on today's \$25 billion expenditure, rebuilding the Interstates will cost \$2.5 trillion over the next 50 years. But Congress clings to the notion that states shouldn't toll the existing system, since the roads are already paid for.
- Most of the momentum for experimenting with MBUF and Vehicle Miles Traveled (VMT) systems is now coming from the states. "The objective is not to toll," said one state official. "The objective is to find the most financially viable means available to us" to meet highway infrastructure requirements. The conference program featured profiles of several state initiatives, including a major pilot project under way in Minnesota.
- Public buy-in is essential to the success of MBUF and VMT systems, and experience shows that familiarity breeds acceptance. "Anywhere these things exist and have existed, the whole concept of tolling polls better," said one speaker. A panelist reported that local transportation improvement initiatives in one high-growth jurisdiction achieved a bipartisan, 71% success rate over last 10 years, showing that "people are willing to pay when they can see first-hand what they're getting" and have confidence in the implementing agency.

- New technologies are reshaping the financial and administrative systems on which transportation authorities depend, and may soon transform the way roads are used. In time, mileage fees may come to be seen as a standard, relatively small part of a wider transportation ecosystem, in which drivers can buy apps to help them avoid heavy congestion, vehicles are automated, and technology companies contract with municipalities to deliver traffic management systems for robotic vehicles.
- A session on MBUF systems in Europe traced hurdles with technology, public understanding, and choices among revenue collection systems. Funding mechanisms must be sufficient to pay for the roads in a particular jurisdiction, charging must be as fair and flexible as possible, and specific transport policies will set expectations for traffic management and environmental protection.
- For governments to reinvest in America's transportation system at a more realistic level, the public will have to understand the urgent need for action. A recent forum at the University of Virginia's Miller Center concluded that stakeholders "will feel compelled to take action" once they understand the significant costs and risks of a compromised transportation system. But to make that happen, said one panelist, "we've got to reach regular folks. We've got to reach political leaders. It's all part and parcel."

Susan Binder of Cambridge Systematics, former Majority Senior Policy Advisor for the Senate Environment and Public Works Committee, said an educational forum like the Mileage-Based User Fee Alliance (MBUFA) "is very, very useful to engage the pros, the cons, and the option identification, to be credible, and not shy away or be dismissive" on issues of funding, impact, fairness, and technology costs.

MBUFA Executive Director Barbara Rohde stressed that education is the top priority for the industry's relationship with public policy-makers and media. "By showing that we can work with one voice, we will make a difference."

## **Introduction**

The International Bridge, Tunnel and Turnpike Association (IBTTA) convened the *Symposium on Mileage-Based User Fees (MBUF) and Transportation Finance Summit* at a moment of great import for the U.S. tolling industry and the network of roads and infrastructure it supports.

The decision to co-locate two compatible meetings in Jersey City April 29-May 1 captured two key aspects of the challenge ahead: the immediate need to maintain and rebuild an aging Interstate highway infrastructure, and the opportunity to introduce new financing mechanisms that will be more sustainable than continuing reliance on the federal excise tax on gasoline.

IBTTA President Jordi Graells said an increasingly positive political climate in the United States has created an opportunity to introduce effective new solutions and “see the connections between seemingly disparate ideas.” But “it’s not the time to talk theory,” he told participants. “We have to go straight to the point and deliver real solutions.”

Executive Director and CEO Patrick Jones said IBTTA’s positioning campaign will help the public understand “that transportation is a lot like the other networks we participate in.” Customers pay hundreds or thousands of dollars per year for water, electricity, communications, and fuel, “yet not many people recognize that we spend only \$275 a year in [per capita] gas taxes to support a tremendous road infrastructure.” Jones said a recent forum at the University of Virginia’s Miller Center concluded that stakeholders “will feel compelled to take action” once they understand the significant costs and risks of a compromised transportation system.

## **The Context**

The symposium convened with U.S. federal transportation legislation at a crossroads. Following passage of a two-year Senate transportation bill that included pilot funding for MBUF projects, the House of Representatives adopted a 90-day extension that linked transportation infrastructure funding to approval of the controversial Keystone XL Pipeline. Panelists foresaw a number of possible next steps—from a FY 2013 funding measure that introduced new policies and greater efficiencies, to a scenario where \$39 billion in annual funding was reduced to the \$11.8 billion available through the Highway Trust Fund.

The continuing roadblocks to reliable funding point to the need to reinvest in America’s transportation system “at a level more commensurate with the reality of what needs to be invested,” one panelist noted. Another speaker cited a curious contradiction on the part of some elected officials who subscribe to a free market philosophy, “except don’t talk about pricing and free markets in transportation.” The solution, he said, is to reach out far and wide: “We’ve got to reach regular folks. We’ve got to reach political leaders. It’s all part and parcel.”

## **The Need**

The fundamental goal of tolling and MBUF is to build a more solid foundation for transportation finance. The gasoline tax is no longer a sustainable source of funding, “not to mention that it’s not very well aligned with long-term energy and environment policy,” a panelist said. Revenues have been eroded by improved vehicle efficiency, new fuel sources, and changing patterns of vehicle use, at a time when much of the Interstate highway system is in immediate need of replacement or major upgrade.

The combination of rising demand and declining resources represents a “financial crisis of unparalleled proportions,” with no simple solutions in sight. Declining revenues have made it difficult for some states and regions to maintain existing infrastructure, and jurisdictions with continuing economic and population growth lack financial resources to bring on new capacity.

Some panelists said the funding problem is made worse by a patchwork of state and regional tolling authorities that “has left a constellation of systems across the country that are not compatible with one another.” An integrated, national system “is a vision that will require some federal role up-front,” a speaker said – not in the form of a prescriptive standard, but through an implementation framework based on customer choice and perceived value. He said initiatives like the I-95 Corridor Coalition showed how a coordinated effort could help lay the groundwork for a multi-state MBUF system.

Ed Regan, Senior Vice President of CDM Smith, noted the massive redevelopment that had occurred in the waterfront area where the meeting was taking place. “It took a lot of money, and I’m sure a lot of political haggling, but the biggest thing it took was a vision of what the waterfront could be.” The U.S. transportation system needs “a realistic, clear vision of what lies ahead for the next 50 years and beyond,” and “we need a new vision for how to pay for it.”

## **Financing Models**

### ***The Federal Perspective***

On the first morning of the symposium, Regan traced today’s Interstate system back to Franklin Delano Roosevelt’s vision of a coast-to-coast, limited access highway system that would connect every corner of the country. “Decades later, we have 47,000 miles of mobility, connectivity, and economic vitality, and I don’t think anyone would dispute that this was the most important transportation investment, probably the most important transportation policy decision, that was ever made in the United States.”

The problem is that:

- The federal government paid for 90% of the construction, “but they own none of it. It’s now the responsibility of the states,” which are “left holding the bag to pay for the next 50 years and beyond.”
- Of the \$132 billion that went into building the original system, \$119 billion came from federal coffers. But states now spend more than \$25 billion per year on Interstate maintenance, construction, and expansion.

- Federal funds cover about 40% of the annual cost of the system, “and given the current trend in Washington, I’m sure you’ll agree that that’s likely to decrease.”
- Congress continues to cling to the notion that states shouldn’t toll the existing Interstate system, since the roads are already paid for.
- Allowing for 2.5% annual inflation on today’s \$25 billion expenditure, rebuilding the Interstates will cost \$2.5 trillion over the next 50 years. Regan projected that \$2.0 trillion of that total will likely have to be covered by the states.

Jack Schenendorf of Covington & Burling LLP, former Chief Counsel to the House Committee on Transportation and Infrastructure, presented a three-part funding plan that could represent a “national solution to a national problem”:

- A federal user fee, essentially based on vehicle miles travelled, with revenues dedicated to preserving and expanding the Interstate system
- A federal motor carrier user fee that would be applied to and fund freight projects outside the Interstate system
- Use of the existing Highway Trust Fund to pay for federal aid projects outside the Interstates.

The user fee would be applied to all vehicles through an all-electronic system similar to Easy Pass. The system would be designed for rapid implementation, so that reinvestment in transportation infrastructure could begin quickly. The fee structure would differentiate passenger vehicles, light trucks, and heavy trucks and establish a graduated fee for low-, average-, and high-need corridors.

Schenendorf said revenues from the new system would be earmarked for infrastructure modernization. “This is one of the keys to the proposal, because it would create a very clear vision for the public of what we were trying to accomplish,” he said. “It would be set up to return the Interstate to being the crown jewel of our transportation network. It’s something the public could understand, politicians could understand, and would help to make an acceptable investment.”

Over time, he said the plan would pave the way for a shift to a system based on vehicle miles travelled (VMT) by getting users accustomed to electronic tolling, sidestepping potential concerns about privacy, and addressing issues around interoperability and administration through a consolidated federal system.

### ***The View from the States***

Jim Whitty, Manager of the Office of Innovative Partnerships and Alternative Funding, Oregon Department of Transportation, cited several states that have launched VMT pilot projects, and several more that are considering enabling legislation. “I can’t see action by the federal government in the short or even the medium term,” he said, but “it’s happening at the state level now.”

Earlier generations of Oregonians agreed to state road financing because everyone had an interest in quality infrastructure, where drivers wouldn’t get stuck in the mud. But “the message of the 21<sup>st</sup> century is not about getting out of the mud,” he said. “Our message has to be fairness, not need. Need is a general argument for a transportation tax. We’re talking about fairness.”

Several state officials described the current status of their transportation infrastructure and the financial mechanisms that support it. In one detailed snapshot, Jim Trogdon, Chief Operating Officer of the North Carolina Department of Transportation, said tolling is a means to the wider objective of assuring mobility in the 21<sup>st</sup> century.

“The objective is not to toll,” he said. “The objective is to find the most financially viable means available to us” to meet the state’s infrastructure requirements. But even though North Carolina is one of the few states with a motor fuels tax indexed to wholesale fuel prices, he said revenues “will fall off a cliff between 2018 and 2020,” after tougher fuel efficiency standards take effect in 2014. With 80,000 miles of road and the country’s eighth-highest MFT, rate increases have not kept pace with inflation, or with increases in vehicle miles travelled. As the state’s population grows by 50%, transaction fee revenue will increase, but “the challenges will outpace the revenue.” Under the current financing system, greater efficiency “will hurt things that depend on that revenue.”

The conference featured an in-depth review of a \$5 million MBUF pilot project in Minnesota, as well as an overview of initiatives in several other states. The Minnesota effort relied on a combination of technology and policy development, building on smart phone systems and cellular networks that customers were already using. State-wide opinion research showed that Minnesotans expected all drivers to pay their fair share for highway use, and favored a higher charge for large vehicles that produce more pollution. They expressed concern about costs, system complexity, reliability of technology, privacy, and differential pricing based on time of day, congestion, or location of driving.

A panelist said the state may run into difficulties when it switches its financing system from gallons to mileage. The pilot project also determined that MBUF collection costs will be far higher than they were for the gas tax.

Many states use creative strategies to mix and match project funding sources. In Colorado, the Transportation Infrastructure Finance and Innovation Act (TIFIA) was the linchpin of a multi-modal project that extended the tolling network along U.S. Highway I-36. In Virginia, authorities developed strategies for integrating operations and funding a long stretch of Highway I-95/395 to combine bus rapid transit and high-occupancy vehicle lanes. Funding options included impact fees for new development, benefit assessments, tax increment financing, developer contributions, joint development, and leasing of rights of way. A representative of Georgia’s State Road and Tollway Authority described the mix of financing systems that had evolved on its four major facilities, while Maryland relied on \$20 billion in debt financing to cover 82% of the cost of a new toll highway without imposing unpopular new taxes or toll increases.

In another session, participants heard about Delaware’s experience as a small state with a lot of pass-through traffic that could only benefit from MBUF through a multi-state system built on bond funding, similar to the reciprocal network behind Easy Pass.

### **Public Awareness and Buy-In**

Transportation infrastructure pricing systems are difficult to justify to customers or stakeholders who’ve never seen them before, but one speaker said the solution is to show how well they work. “Anywhere these things exist and have existed, the whole



concept of tolling polls better,” he said, and the same applies to MBUF: “Through familiarity, we get an openness to these things.”

A panelist said taxpayers generally resist what they see as “an expensive, complicated new form of taxation,” particularly if they don’t believe the money they already pay is being spent wisely. Against that challenge, transportation agencies are “working with the travellers in their communities to do some new and innovative things to see if they can create a sustainable system.” In one high-growth jurisdiction, local transportation improvement initiatives have recorded a bipartisan, 71% success rate over last 10 years, showing that “people are willing to pay when they can see first-hand what they’re getting” and have confidence in the implementing agency.

Research linked to the Minnesota MBUF pilot project showed that drivers understood the seriousness of the gas tax revenue shortfall, but needed more information on how the system would work in the real world. A large sub-group of survey and focus group participants will need more answers, and while the researchers concluded the customers are willing to be convinced, the state will need the right language to make the case.

Although privacy was a concern for some users in the Minnesota pilot project, drivers could keep their data out of the cloud simply by turning off their transmitting devices. A panelist said a representative of the American Civil Liberties Union initially expressed concern about privacy, but gradually concluded that the system could work.

North Carolina recognized that a new financing system would have to be built with the support of all the groups it affected, including retail operators, manufacturers, truckers, communities, and chambers of commerce. The bottom line for customer acceptance is efficiency: a four-hour trip through the state would take seven without the Interstate system, three if the roads are upgraded, so the question is whether that difference is worth \$37 to the average tractor trailer driver.

At the same time, visible financing mechanisms like all-electronic tolling shift the standards customers set for the travelling experience. “There’s a switch flipped on expectations of road clearings, customer service, (and) easier communication,” a panelist noted. Another panelist introduced Value of Time (VOT) as a metric that is tricky to estimate, but can connect the cost of a fee-based system to the benefits a driver receives in return. The system has to factor in a driver’s economic status, the reason for their trip, trip length, and other variable factors, since “revenue to calculate VOT from managed lanes depends on what the driver is willing to spend to save on travel time.”

Jack Opiola, Senior Vice President and Managing Partner of D’Artagnan Consulting LLP, pointed to a very small minority of combustion vehicles that use farm fuel rather than filling up at the pump. “It’s a very attractive option for someone who’s [financially] pressed,” he said, and while the practice is known and is not legal, it isn’t generally regulated. The result is that a future VMT system will have to be “somewhat holistic” in its relationship with users who game the system: otherwise, “they’re going to be heroes in the society that others will follow.”

During the town hall session on the last day of the symposium, a group of participants explored social justice issues that could undermine transportation authorities’ public franchise if they aren’t addressed. User fees can create serious disadvantage for low-

income populations and households, the cost savings attached to electronic payment systems often benefit the customers who need them the least, and e-payments are unavailable to people who have no credit cards or bank accounts, or are not documented U.S. residents. Highway finance decisions also have serious implications for public transit in jurisdictions where toll revenues cross-subsidize bus and subway services. Participants discussed whether an MBUF system can be expected to solve customer equity issues, and whether there are pragmatic arguments for making the attempt.

But over the longer term, public acceptance of new financing strategies may not be a serious issue. “It’s just going to happen,” one panelist predicted. Although no one predicted the rise of social networks, early concerns about privacy, access, and cost rapidly gave way to a conversation about how best to use them. Similarly, “the big issue is how people are going to want to interact with this new transportation system.”

### Technologies

Several speakers touched on technology options that are reshaping the financial and administrative systems on which transportation authorities depend, and may soon transform the way roads are used. From the various systems that enable electronic tolling, to cloud- and smart phone-based applications that streamline driver and vehicle registration, many of these technologies are expected to create opportunities and momentum for different jurisdictions to move forward with mileage-based user fees.

Over time, panelists said mileage fees may come to be seen as a standard, relatively small part of a wider transportation ecosystem, in which drivers can buy apps to help them avoid heavy congestion, vehicles are automated, and technology companies contract with municipalities to deliver traffic management systems for robotic vehicles.

Specific opportunities and focal points included:

- Registration systems in which every vehicle “has an electronic title until it ends up in the junkyard”
- Continuing opportunities to reduce costs and boost efficiency through all-electronic tolling and greater interoperability
- Methods of coordinating systems among jurisdictions to control leakage
- The advent of GPS-based tagging systems that can largely address privacy concerns by using diagnostic information from onboard computers and downloading it in encrypted formats via cellular networks
- The potential to design an entire MBUF system as a smart phone app (without *ever* giving drivers a reason to turn to their phones while they’re on the road)
- The need to weigh the pros and cons of as many as 1,300 viable technologies against the objectives and parameters that must be met by different systems
- The need for rate structures that differentiate between full-scale highways and the 1.9 million miles of major roads in the U.S. that are still not paved

Ultimately, a panelist said the suitability of technologies to support instantaneous, mileage-based user charging “depends on what the question is and what the future looks like.” The answer depends not only on the revenue a system can generate, but on the total impact of implementation and ownership, including deployment, operating

and maintenance, environmental costs, job creation, and equity among stakeholders and end users. The impact on the user experience matters because “there has to be some benefit” if people are going to pay \$300 more per year to drive on the same roadways.

### **Getting Started**

Symposium participants heard about a series of pilot studies that are addressing the technology, payment, and administrative systems that will form the backbone of a mileage-based fee system. An update on MBUF implementation efforts in Nevada, Colorado, Washington State, and New York State pointed to growing experience with:

- Open systems approaches that integrate with available technologies and offer a wider range of interface and payment choices for users
- Pilot systems that can integrate multiple vendors for commercially available technologies and payment processing functions, rather than just one
- The importance of involving the public in system planning, addressing the needs of specific stakeholder groups, and framing the benefits of mileage-based or road user charges to address cynicism and equity concerns on the part of taxpayers

Along the way, mileage-based systems will have to deal with implementation challenges that are already familiar to existing tolling systems. Evasion will be a persistent problem as long as people continue to drive with suspended licences and truckers can abandon seized vehicles. In border states, in particular, one participant said it may not be possible to introduce mileage-based systems until evasion is addressed.

While congestion cost the U.S. economy an estimated \$101 billion in wasted fuel and lost productivity and 4.8 billion hours in wasted travel time in 2010, solutions are still elusive. Since the benefits of congestion relief are difficult to allocate, a panelist said it’s hard to know what fees to charge or how to charge them, and “getting the public onboard is going to be tricky.” Getting more city-dwellers using public transit would cut congestion, improve travel times, and reduce vehicle emissions and energy consumption, but “that’s something that will also require funding” for system improvements and repairs.

In Manhattan, a congestion-based tolling system would have eliminated a persistent problem on the roads, while raising \$2 billion per year in new revenue that could have been dedicated to the city’s transit system. But a speaker said neighborhoods in outer boroughs saw the idea as a hidden tax on drivers, and the plan failed in the state assembly. Although congestion pricing for New York City is now off the table, it may be possible to consider differential policies based on time of day or type of road.

A session on MBUF systems in Europe traced some of the same hurdles U.S. operators have encountered with technology, public understanding, and choosing the best revenue collection system to meet a particular set of objectives. A panelist said funding mechanisms must be sufficient to pay for the roads in a particular jurisdiction, charging systems must be as fair and flexible as possible, and specific transport policies will set expectations for traffic management and environmental protection. In general, tolling systems in Europe have helped to “green up” transportation by cutting emissions, reducing traffic, and encouraging the introduction of more efficient engines.

### What's Next

A speaker said U.S. agencies have pursued a “path of incrementalism,” using smaller demonstration projects to discover strategies and solutions that can eventually be scaled up. But the urgency of the situation, combined with two government commissions that recommended MBUF as a sustainable revenue strategy, has helped feed decision-makers’ willingness to embrace tolling and other funding mechanisms beyond the gas tax.

In the closing session, moderator Joshua Schank of the Eno Center for Transportation asked panelists how the industry should respond to a likely 30% cut in federal funding.

- Arthur Guzzetti of the American Public Transportation Association refused to concede that the 30% would be lost, but said the cuts should be proportional if they take place. “The federal government should be investing in public transportation [because] the benefits outweigh the costs by several times, and if the benefits outweigh the costs, does it not make sense to invest in it?”
- Adrian Moore of the Reason Foundation said the priority at the federal level should be to maintain and upgrade the Interstate system. “For national transportation, which is what the federal government should care about, the most important thing is the Interstate system.” Other parts of the system should be addressed by state and local governments.
- Kathy Ruffalo of Ruffalo and Associates said federal programs should focus on outcomes, like access for goods and people and facilitation of economic growth, rather than designating specific items for funding. While the federal government can set priorities, “different parts of the country will have different needs that have to be addressed in different ways.”
- Doug Foy of Serrafix Corporation said priority-setting should be left to the states. Much of the innovation in transportation is already taking place at that level, and “if you’re going to ask the states to step up and do as much as we’re now asking them to do, we have to give them the freedom to be smart about it.”
- Tyler Duvall of McKinsey & Company proposed a specific allocation of the remaining funds: 35% to a metropolitan congestion/competitive grant program, 35% to national highway system safety measures, 15% for formula funding of Interstate improvements with a focus on traffic bottlenecks, and 15% to federal credit assistance for transportation investments.

Beyond the immediate challenges on Capitol Hill, futurist Garry Golden of Forward Elements, Inc. urged participants to pay attention to the “advanced user culture transitions” that may be ahead for transportation infrastructure and finance, based on the mindsets, value systems, and behaviors that are emerging among customers and other stakeholders. He said connected cars will transform drivers into captains, and that shift could enable a sustainable financing model where users are willing to pay based on mileage, time of day, and vehicle type. The hallmarks of such a system would include:

- Digital and web-based platforms
- Rewards for performance
- Product and service innovation
- Greater trust and transparency

- An expanded role for data

The media message for such a system: “Self-driving cars have captains in charge.”

Golden said transportation authorities must become experts at experience design as well as engineering, and embrace the development of electric vehicles that open up a whole new value chain for data. “Electric cars are digital platforms, and we cannot go into the next century model of funding without a digital platform. So I think it is within our self-interest as an industry to say we want to accelerate the transition to electric cars [which] will enable better revenue opportunities in the future.”

Barbara Rohde, Executive Director of the Mileage-Based User Fee Alliance, said education is the top priority for the industry’s relationship with public policy-makers and media. “By showing that we can work with one voice, we will make a difference.”

Susan Binder of Cambridge Systematics, former Majority Senior Policy Advisor for the Senate Environment and Public Works Committee, said Congressional staff are looking for credible sources of information. An educational forum like MBUFA “is very, very useful to engage the pros, the cons, and the option identification, to be credible, and not shy away or be dismissive” on issues of funding, impact, fairness, and technology costs.

Jack Basso of the American Association of State Highway and Transportation Officials said the \$45 million recently approved for MBUF pilot projects represented a “significant accomplishment.” But “nothing happens unless somebody does something, so we’ve got a coalition going and we need more people involved.”